

Claim Amendments:

Please amend the claims as follows:

1. (Currently Amended) In a data processing system, a method to tune a degree distribution topology of connectivity relationships between a plurality of self-organizing software agents, comprising:

establishing a topology ~~to address~~ of agent degree distribution connectivity relationships for each of a plurality of system topology criteria;

obtaining information including inter-agent degree distribution connectivity relationship of each of said plurality of agents relative to all the other of said plurality of agents in a manner that is descriptive of the current system degree distribution connectivity topology, and information of the current system degree distribution connectivity topology as compared to at least one of said plurality of established system topology criteria; and

based at least in part on the obtained information ~~and~~ making at least one recommendation to at least one of the plurality of agents ~~that is intended~~ of change of its inter-agent degree connectivity relationships ~~to modify the topology of the at least one of the plurality of agents~~ to more closely match the topology of a selected one of the plurality of established topology criteria.

2. (Previously Presented) A method as in claim 1, where the step of obtaining information is performed by a topology tuner agent by querying a system registry to determine identities of individual ones of the plurality of agents.

3. (Currently Amended) A method as in claim 1, where the step of obtaining information is performed by a topology tuner agent by querying individual ones of the plurality of agents to determine to which other agent or agents the individual one of the plurality of agents currently has a connectivity relationship.

4. (Currently Amended) A method as in claim 1, where the step of obtaining information is performed by a topology tuner agent by querying a system registry to determine to which other

agent or agents that individual ones of the plurality of agents currently have a connectivity relationship.

5. (Currently amended) A method as in claim 1, where the step of obtaining information is performed on a periodic basis by a topology tuner agent to update the state of the topology, and where the topology tuner agent makes the at least one recommendation when a topology threshold condition ~~approaching of the current system degree distribution connectivity topology~~ has drifted from a threshold condition of the topology corresponding to one of the plurality of established criterions ~~is satisfied~~ has occurred.

6. (Previously Presented ) A method as in claim 1, wherein at least one established criterion comprises a vulnerability of the topology to an attack directed to one or more of the agents and another established criterion comprises a vulnerability of the topology to a failure of one or more of the agents.

7. (Canceled)

8. (Currently Amended) A method as in claim 1, where at least one established criterion comprises a rate at which agents form new connectivity relationships.

9. (Currently Amended) A method as in claim 1, where at least one established criterion comprises a vulnerability of the topology to an attack directed to one or more of the agents, and where the at least one recommendation does not constrain the set of potential agents that an agent may select from to form a new connectivity relationship or relationships such that the topology evolves towards a Gaussian type distribution.

10. (Currently Amended) A method as in claim 1, where at least one established criterion comprises a vulnerability of the topology to an attack directed to one or more of the agents, and where the at least one recommendation constrains the set of potential agents that an agent may select from to form a new connectivity relationship or relationships such that at-risk agents have few relationships, and such that the topology that contains the not at-risk agents evolves towards a Gaussian type distribution.

11. (Currently Amended) A method as in claim 1, where at least one established criterion comprises a vulnerability of the topology to a failure of one or more of the agents, and where the at least one recommendation constrains the set of potential agents that an agent may select from to form a new connectivity relationship or relationship such that the topology evolves towards a scale-free network.

12. (Previously Presented) A method as in claim 1, where obtaining information comprises monitoring the drift or re-self-organization of the topology over time, and where the at least one recommendation is made to compensate for the drift.

13. (Previously Presented) A method as in claim 1, where obtaining information and making at least one recommendation are performed by a topology tuner agent that is recognized by the plurality of agents to have privileges giving it sufficient nominal authority to make its recommendations to the other agents effective.

14. (Previously Presented) A method as in claim 13, where said topology tuner agent behaves otherwise as a peer agent that uses the same system messaging infrastructure as the other agents.

15. (Previously Presented) A method as in claim 1, where making at least one recommendation is performed by a topology tuner agent using a multi-cast technique to simultaneously contact a number of the agents.

16. (Previously Presented) A method as in claim 1, where making at least one recommendation is performed by a topology tuner agent using a single-cast technique to individually contact the agents.

17. (Currently Amended) A method as in claim 1, where obtaining gathers information concerning all connectivity relationships, and where the at least one recommendation applies to all types of connectivity relationships between agents.

18. (Currently Amended) A method as in claim 1, where obtaining information gathers information concerning connectivity relationships of a certain type or types, and where the at least one recommendation applies only to the certain type or types of connectivity relationships between agents.

19. (Previously Presented) A method as in claim 1, where obtaining information and making at least one recommendation are performed in response to a notification of a change in the topology.

20. (Currently Amended) A method as in claim 1, where obtaining information and making at least one recommendation are performed by a topology tuner agent that monitors how frequently individual ones of the agents change their connectivity relationships, said topology tuner agent querying those agents more frequently that more frequently change their connectivity relationships.

21. (Previously Presented) A method as in claim 1, where obtaining information and making at least one recommendation are performed by an entity in an environment that hosts the plurality of agents.

22. (Previously Presented) A method as in claim 1, where the plurality of agents operate with a common set of system policies that are capable of being changed by a policy update procedure, and where making at least one recommendation is performed during a policy update procedure.

23. (Currently amended) A computer readable medium storing a topology tuner software agent operable in a data processing system to tune a degree distribution topology of connectivity relationships between ~~that comprises~~ a plurality of self-organizing software agents, comprising:

computer program code for establishing a topology of agent degree distribution connectivity relationships for each of a plurality of system topology criteria;

computer program code for obtaining information that is descriptive of a the current topology of the degree distribution relationships between each of said plurality of agents relative to all of the other of said plurality of the self-organizing software agents from at least one of a system registry function and from the self-organizing software agents themselves; and

computer code for obtaining information from a comparison of the obtained current degree distribution connectivity topology relative to the topology corresponding to at least one of said established system criterions; and

computer program code, responsive to the obtained information for making at least one recommendation of change of inter-agent connectivity relationship to at least one those of the plurality of self-organizing software agents that ~~is intended~~ have to modify their inter-agent connectivity relationships to achieve a new system the topology that is closer to the topology corresponding to a selected one of the plurality of established criterions.

24. (Currently Amended) A The computer readable medium storing the topology tuner software agent as in claim 23, where obtaining information is performed periodically by said topology tuner agent to update the state of the topology, and where the topology tuner software agent makes the at least one recommendation in response to a topology threshold condition being satisfied.

25. (Currently Amended) A The computer readable medium storing the topology tuner software agent as in claim 23, where an established criterion comprises a vulnerability of the topology to an attack directed to one or more of the self-organizing software agents.

26. (Currently Amended) A The computer readable medium storing the topology tuner software agent as in claim 23, where an established criterion comprises a vulnerability of the topology to a failure of one or more of the self-organizing software agents.

27. (Currently Amended) A The computer readable medium storing the topology tuner software agent as in claim 23, where an established criterion comprises a rate at which the self-organizing software agents form new relationships.

28. (Currently amended) A The computer readable medium storing the topology tuner software agent as in claim 23, where an established criterion comprises a vulnerability of the topology to an attack directed to one or more of the self-organizing software agents, and where the at least one recommendation does not constrain the set of potential self-organizing software agents that a self-organizing software agent may select from to form a new connectivity relationship or relationships such that the topology evolves towards a Gaussian type distribution.

29. (Currently Amended) A The computer readable medium storing the topology tuner software agent as in claim 23, where an established criterion comprises a vulnerability of the topology to an attack directed to one or more of the self-organizing software agents, and where the at least one recommendation constrains the set of potential self-organizing software agents that a self-organizing software agent may select from to form a new connectivity relationship or relationships such that at-risk agents have few connectivity relationships, and such that the topology that contains the not at-risk agents evolves towards a Gaussian type distribution.

30. (Currently Amended) A The computer readable medium storing the topology tuner software agent as in claim 23, where an established criterion comprises a vulnerability of the topology to a failure of one or more of the self-organizing software agents, and where the at least one recommendation constrains the set of potential self-organizing software agents that a self-organizing software agent may select from to form a new connectivity relationship or relationship such that the topology evolves towards a scale-free network.

31. (Currently Amended) A The computer readable medium storing the topology tuner software agent as in claim 23, where said computer program code for obtaining information comprises computer program code for monitoring the drift or re-self-organization of the topology over time, and where the at least one recommendation is made to compensate for the drift.

32. (Currently Amended) A The computer readable medium storing the topology tuner software agent as in claim 23, where said topology tuner software agent is recognized by the plurality of self-organizing software agents to have privileges giving it sufficient nominal authority to make its recommendations to the self-organizing software agents effective.

33. (Currently Amended) A The computer readable medium storing the topology tuner software agent as in claim 32, where said topology tuner software agent behaves otherwise as a peer agent that uses the same system messaging infrastructure as the self-organizing software agents.

34. (Currently Amended) A The computer readable medium storing the topology tuner software agent as in claim 23, where making at least one recommendation is performed using a multi-cast technique to simultaneously contact a number of the self-organizing software agents, or using a single-cast technique to individually contact the self-organizing software agents.

35. (Currently Amended) A The computer readable medium storing the topology tuner software agent as in claim 23, where said computer program code for obtaining information gathers information concerning all connectivity relationships, and where the at least one recommendation applies to all types of connectivity relationships between self-organizing software agents.

36. (Currently Amended) A The computer readable medium storing the topology tuner software agent as in claim 23, where said computer program code for obtaining information gathers information concerning relationships of a certain type or types, and where the at least one recommendation applies only to the certain type or types of connectivity relationships between self-organizing software agents.

37. (Currently Amended) A The computer readable medium storing the topology tuner software agent as in claim 23, where said computer program code for obtaining information and making at least one recommendation operate in response to a notification of a change in the topology.

38. (Currently Amended) A The computer readable medium storing the topology tuner software agent as in claim 23, where said topology tuner software agent that monitors how frequently individual ones of the self-organizing software agents change their connectivity relationships, and queries those self-organizing software agents more frequently that more frequently change their connectivity relationships.

39. (Currently Amended) A The computer readable medium storing the topology tuner software agent as in claim 23, where the plurality of self-organizing software agents operate with a common set of system policies that are capable of being changed by a policy update procedure, and where said computer program code for making at least one recommendation operates through a policy update procedure.

40. (Canceled)

41. (Currently Amended) A The computer readable medium storing the topology tuner software agent as in claim 24, where said topology threshold condition is expressed as a variable threshold value.

42. (Currently Amended) A data processing system comprising:

a plurality of nodes, each comprising a computer readable medium storing a self-organizing software agent ~~agents~~ configurable for autonomously establishing connectivity relationships between themselves to achieve a topology of agent degree distribution connectivity, where the totality of the relationships can be represented by a topological structure of the ~~having~~ nodes ~~that each comprise one of the plurality of software agents~~ and links between the nodes that comprise the established connectivity relationships;

where at least one of the software agents operates to establish ~~data establishing a~~ topology ~~to address~~ of agent degree distribution connectivity relationships for each one of a plurality of different criterions;

and the at least one of the software agents further comprises a topology tuning function that obtains information that is descriptive of the current system topology including of the degree distribution connectivity ~~inter-agent relationships existing between each of the plurality of agents relative to each of the other of the plurality of agents and information of the current~~ system topology as compared to the topology of at least one of the established different criterions and, based at least in part on the obtained information and on the data of the topology comparison, ~~that makes a recommendation to at least one~~ those of the plurality of software agents ~~that is intended~~ would have to modify ~~the~~ their inter-agent connectivity relationships to obtain a new system degree distribution connectivity topology to more closely match the topology of a selected one of the plurality of established criterions.

43. (Currently Amended) A data processing system as in claim 42, where the said at least one of the software agents comprises ~~topology tuning function is performed by a~~ topology tuner software agent.



44. (Currently Amended) A data processing system as in claim 42, where an established criterion comprises a rate at which software agents form new connectivity relationships.

45. (Currently Amended) A data processing system as in claim 42, where an established criterion comprises a vulnerability of the topology to an attack directed to one or more of the software agents, and where the at least one recommendation in one case does not constrain the set of potential software agents that a software agent may select from to form a new connectivity relationship or relationships such that the topology evolves towards a Gaussian type distribution, and where the at least one recommendation in another case does constrain the set of potential software agents that a software agent may select from to form a new connectivity relationship or relationships such that at-risk software agents have few connectivity relationships, and such that a portion of the topology that contains not at-risk software agents evolves towards a Gaussian type distribution.

46. (Currently Amended) A data processing system as in claim 42, where an established criterion comprises a vulnerability of the topology to a failure of one or more of the software agents, and where the at least one recommendation constrains the set of potential software agents that a software agent may select from to form a new connectivity relationship or relationship such that the topology evolves towards a scale-free network.

---

47. (Previously Presented) A method as in claim 1 wherein the step of obtaining information comprises determining to which one of the plurality of established criteria that the current system topology most closely corresponds.

48. (Previously Presented) A method as in claim 47 wherein an established criterion comprises a vulnerability of the topology to an attack directed to one or more of the agents and another established criterion comprises a vulnerability of the topology to a failure of one or more of the agents.

49. (Previously Presented) A method as in claim 48 wherein the established criterion of vulnerability of the topology to attack evolves toward a Gaussian type distribution and the established criterion of vulnerability of failure evolves toward a scale free distribution.

50. (Currently Amended) A method as in claim 47 wherein the step of obtaining the current information comprises forming a histogram of the ~~inter-relationships~~ connectivity relationships of the plurality of agents.

51. (Previously Presented) A method as in claim 47 wherein the information is obtained and compared to at least one of the plurality of established criterions.